Zemskiy S. V.

GRUZIN, P.L., doktor fiz.-mat.nauk; ZEMSKIY, S.V.; TYUTYUNNIK, A.D., kand.tekhn. nauk [deceased]

Diffusion in titanium and titanium-base alloys. Probl. metalloved. i fiz.met. no.5:366-382 '58. (MIRA 11:4)
(Titanium--Metallography) (Diffusion)

"An Investigation of the Mobility of Carbon Atoms in Steel and Alloys with the Use of the Isotope C^{14}," with Gruzin, P. L., Dr. Phys. and Math. Sci.; Babikova, Ye. F.; Borisov, Ye. V.; Peregudov, N. P.; Polikarpov, Yu. A.; Tirkina, A. N.; Fedorov, G. B., Cand. Tech. Sci.; Shumilov, M. A.; Cand. Tech. Sci., page 327.

"Diffusion in Titanium and Titanium-base Alloys," with Gruzin, P. L. Dr. Phys. and Mathematical Sci.; and Tyutyunnik, A. D., Cand. Tech. Sci. (Deceased). page 366.

In book Problems of Physical Metallurgy, Moscow, Metallurgizdat, 1958, 603p. (Its: Sbornik trudov, v. 5)

The articles in the book present results of investigations conducted by the issuing body, Inst. of Physical Metallurgy, a part of the Cent. Sci. Res. Inst. of Ferrous Metallurgy, located in Dnepropetrovsk. The investigations were concerned with phase transformations in alloys, strengthening and softening processes, diffusion processes (studied with the aid of radioactive isotopes), and certain other questions.

GRUZIN, P.L.; ZEMSKIY, S.V.

Investigation of wear of the refractory lining of metallurgical furnaces with the aid of radioactive isotopes. Zav.lab.22 no.2: 169-177 F'56. (MLRA 9:6)

1.Institut metallovedeniya i fiziki metallov TSentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii.
(Metallurgical furnaces)(Radioisotopes--Industrial applications)

ZEMSKII, V. A.

PA 35/49T102

USSR/Physics
Electricity
Terminology

Jan 49

"Concerning the Articles of M. F. Malikov, ''The Introduction of Absolute Electric and Magnetic Units in the USSR,' and P. L. Kalantarov, 'The Unit Systems for Measuring Electric and Magnetic Quantities'" 14 pp

"Elektrichestvo" No 1

Articles by V. Ye. Solov'yev, V. A. Zemskiy, B. I. Yakhinson, K. M. Polivanov, P. L. Kalantarov, and M. F. Malikov discuss the practicability of adapting "the absolute electromagnetic system of units"

[redacted]

35/49T102

USSR/Physics (Contd)

Jan 49

instead of the international system. The latter two men advocate the new system.

[redacted]

35/49T102

ZEMSKIY, V. A.

"Problems Involved in the Biology of the Propagation of Finback Whales in the Antartic." Cand Biol Sci, Inst of Oceanology, Acad Sci USSR, Moscow, 1953. (RZhBiol, No 1, Sep 54)

SO: Sum 432, 29 Mar 55

ZEMSKIY, V. A.

"Problems Involved in the Biology of the Propagation of Finback Whales in the Antartic." Cand Biol Sci, Inst of Oceanology, Acad Sci USSR, Moscow, 1953. (RZhBiol, No 1, Sep 54)

SO: Sum 432, 29 Mar 55

ARSEN'YEV, Viktor Aleksandrovich; ZEMSKIY, Vyacheslav Alekseyevich;
ENDEL'MAN, G.N., redaktor; MOTORINA, I.A., tekhnicheskiy redaktor

[In the country of whales and penguins] V strane kitov i pingvinov.
Izd. 2-e, ispravl. i dop. [Moskva], Izd-vo Moskovskogo universiteta,
1954. 249 p. (Sredi prirody, no.47) (MLRA 8:6)
(Antarctic regions) (Whaling) (Penguins)

ZEMSKIY, V.A.

Definitions of physical quantities found in high school textbooks. Fiz. v shkole 16 no.3:32-33 My-Je '55. (MLRA 8:6)

1. Pedagogicheskiy institut (g.Orekhovo-Zuyevo)
(Physics--Textbooks)

ZEMSKIY, V.A.

Method of establishing traces of corpora lutea of pregnancy and ovulation on the ovaries of female finback whales [with summary in English]. Biul.MOIP. Otd. biol. 61 no.6:5-13 N-D '56. (MLRA 10:8)
(WHALES) (CORPUS LUTEUM)

ZEMSKIY, V.A.

Some problems in the biology of reproduction of the finback whale in the Antarctic [with summary in English]. Biul.MOIP. Otd.biol. 62 no.2:17-23 Mr-Ap '57. (MLRA 10:8)
(ANTARCTIC REGIONS--WHALES) (REPRODUCTION)

ZEMSKIY, V.A., kand.biol.nauk

Determination of traces of corpora lutea in the Antarctic finback whale. Trudy VNIRO 33:105-160 '58. (MIRA 14:6)
(Antarctic regions -Whales) (Corpus luteum)

ZEMSKIY, V.A., kand.biol.nauk

Growth of newborn finback whales during the period of nursing.
Trudy VNIRO 33:173-178 '58. (MIRA 14:6)
(Whales)

ZEMSKIY, V.A., kand.biol.nauk

Morphobiological adaptations in newborn Antarctic finback whales.
Trudy VNIRO 33:179-185 '58. (MIRA 14:6)
(Antarctic regions--Whales) (Adaptation (Biology))

SOV/26-59-2-18/53

AUTHORS: Zemskiy, V.A., Candidate of Biological Sciences; Berzin, A.A.

TITLE: A Find of Ambergris (Nakhodka ambry)

PERIODICAL: Priroda, 1959, Nr 2, p 86 (USSR)

ABSTRACT: The authors describe finding a piece of ambergris in the stomach of a killed sperm whale (Physeter catodon). According to the opinion of scientists the ambergris is the product of a pathologic digestive process of the whale.

ASSOCIATION: Vsesoyuznyy institut rybnogo khozyaystva i okeanografii (All-Union Institute of the Fishing Industry and Oceanography - Moscow) Tikhookeanskiy institut rybnogo khozyaystva i okeanografii (Institute of the Fishing Industry and Oceanography of the Pacific Ocean - Vladivostok)

Card 1/1

ZEMSKIY, V.A., kand. biolog. nauk

Did the cetaceans possess hind legs? Okhr. prir. i ozel. no.3: 105-107 '60. (MIRA 16:12)

1. Chlen Vserossiyskogo obshchestva sodeystviya okhrane prirody i ozeleneniyu naselennykh punktov.

ZEMSKIY, Vyacheslav Alekseyevich; KLEYNENBERG, S.Ye., otv. red.; POMALEN'-KAYA, O.T., red.; GEORGIYEVA, G.I., tekhn. red.

[Animal world of Antarctica; animals and birds] Zhivotnyi mir Antarktiki; zveri i ptitsy. Moskva, Izd-vo Mosk. univ., 1960. 179 p. (Moskovskoe obshchestvo ispytatelei prirody. Sredi prirody, no.51) (MIRA 14:10)

(Antarctic regions—Zoology)

ZEMSKIY, V.A.

Materials on the reproduction of the Antarctic finback whale (Balaenoptera physalus). Biul. MOIP. Otd. biol. 65 no.1:17-27 Ja-F '60. (MIRA 13:7)

(ANTARCTIC REGIONS--WHALES)

ZEMSKIY, V.A.; BERGIN, A.A.

Rare case of atavism in sperm whales (Physeter catodon L.).
Nauch. dokl. vys. shkoly; biol. nauki no.2:56-60 '61.
(MIRA 14:5)

1. Rekomendovana Vsesoyuznym nauchno-issledovatel'skim institutom okeanografii i rybnogo khozyaystva.
(WHALES) (ATAVISM)

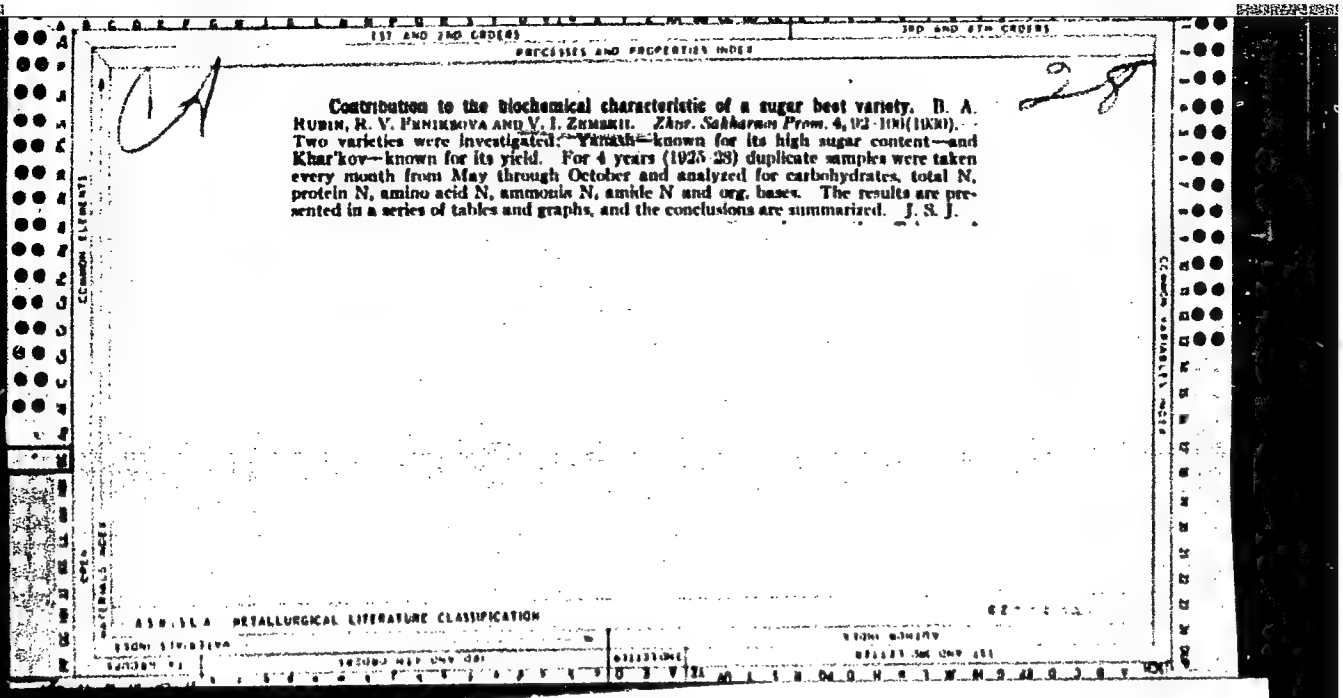
ZEMSKIY, V.A.

Longevity and reproduction cycles in finback whales. Trudy sov. Ikht. kom. no.12:60-67 '61. (MIRA 14:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut morskogo rybnogo khozyaystva i okeanografii.
(Whales) (Reproduction)

ZEMSKIY, Vyacheslav Alekseyevich; KUDIKINA, Ye., red.; NIKITINA, V., tekhn. red.

[Whales of Antarctica] Kity Antarktiki. Kaliningrad, Kaliningradskoe knizhnoe izd-vo, 1962. 166 p. (MIRA 16:8)
(Antarctic regions--Whales)



1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

Contribution to the biochemical characteristic of a sugar beet variety. B. A. Rubin, R. V. Penikhova and V. I. Zemskii. *Zhur. Sakharnoi Prom.* 4, 92-101(1930). Two varieties were investigated: Yemtsh—known for its high sugar content—and Khar'kov—known for its yield. For 4 years (1925-28) duplicate samples were taken every month from May through October and analyzed for carbohydrates, total N, protein N, amino acid N, ammonia N, amide N and org. bases. The results are presented in a series of tables and graphs, and the conclusions are summarized. J. S. J.

ASBELA METALLURGICAL LITERATURE CLASSIFICATION

ZEMSKOMV, V.M.

Effect of BCG vaccine on antitetanus immunity in irradiated and nonirradiated mice. Med.rad. 9 no.9:67-72 S '64. (MIRA 18:4)

ZEMSKOV, A.A.

3-9-24/31

AUTHOR: Zemskov, A.A., Dotsent, Candidate of Historical Sciences.

TITLE: In the Scientific Technical Council (V Nauchno-tekhnicheskom sovete). In the Section of KPSS History (V sektsii istorii KPSS)

PERIODICAL: Vestnik Vysshey Shkoly, 1957, # 9, p 79 (USSR)

ABSTRACT: The article deals with preparations made by Section of KPSS History of the Scientific Technical Council for the 40th Anniversary of the Great Revolution, which include theoretical conferences, the publication of manuals, etc.

The author enumerates the preparatory work carried out by various universities and institutes.

AVAILABLE: Library of Congress

Card 1/1

municipal party organizations, the Ministry of Higher Education of the Ukrainian SSR, Institutes of the Party History, sections of the Ukrainian Academy of Sciences, and leading Kiyev and Leningrad vuzes. More than 5,000 persons were present. Papers were read in Kiyev by: P.T. Tron'ko (Secretary of the K[illegible] Committee, Candidate of Historical Sciences), Professor I.P. Petryakov, T.I. Lipatovand Ye.G. Gorbachev and at Leningrad by: Professor A.V. Fedorov (Doctor of Historical Sciences), I.P. Flerovskiy, and L.P. Parviaynen.

A.B. Konstantinov (Candidate of Historical Sciences and Director of the Historical Institute attached to the Leningrad KPSS District Committee), A.N. Ponomarev (Candidate

Card 1/2

Circuit Sessions of the KPSS Historical Section 3-12-9/27

of Historical Sciences), M.Ya. Pankratova (Institute of Marxism-Leninism) and N.R. Doniy (Candidate of Historical Sciences, Deputy-Director of the Institute of the Party History of the Ukrainian TsK KP) read papers in Kiyev and Leningrad.

ASSOCIATION: Nauchno-tekhnicheskiy Soviet Ministerstva Vysshego obrazovaniya SSSR (Scientific and Technical Council or the USSR Ministry of Higher Education)

AVAILABLE: Library or Congress

Card 2/2

ZEMSKOV, A.A.; NECHIPURENKO, V.I.

Communist Party during the period of the front attack of socialism.
Trudy MTIPP no.20:47-94 '63. (MIRA 17:4)

SOV-3-58-9-27/36

AUTHOR: Zemskov, A.A., Docent, Candidate of Historical Sciences

TITLE: In the Scientific-Technical Council (V nauchno-tekhnicheskom sovete). In the Section of the KPSS History (V sektsii istorii KPSS)

PERIODICAL: Vestnik vysshey shkoly, 1958, Nr 9, pp 75-76 (USSR)

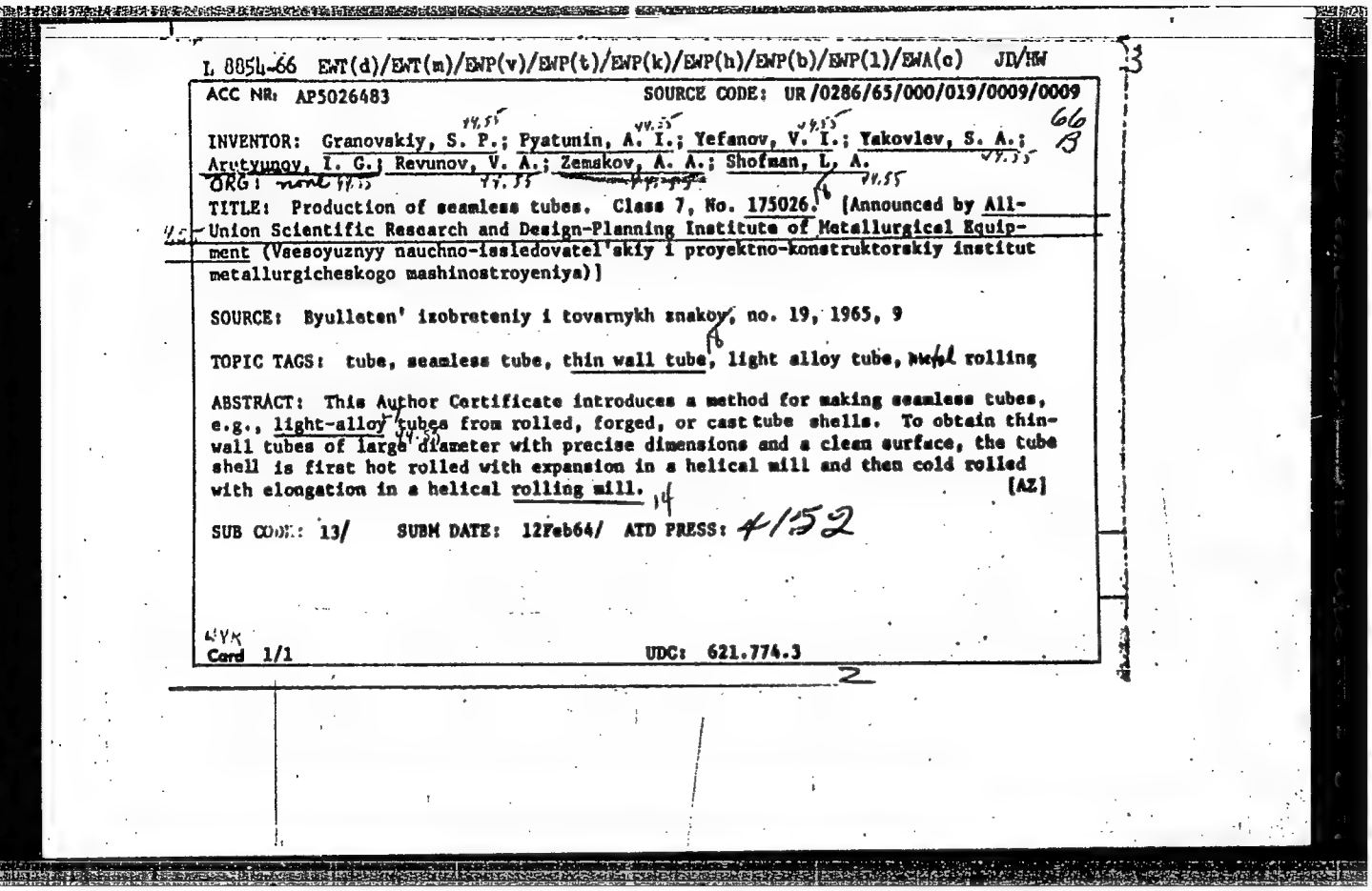
ABSTRACT: A regular meeting of the Section for the History of the KPSS of the Scientific-Technical Council, USSR Ministry of Higher Education, took place in June 1958. Members of the Section and the heads of chairs of Marxism-Leninism and KPSS History of the Moscow, Krasnoyarsk, Rostov and other vuzes discussed the scientific-research work performed by the chairs of KPSS history, History Department of Moscow University imeni M.V. Lomonosov and of the Kazan' University imeni V.I. Ul'yanov (Lenin). P.B. Zhibarev, Substitute Head of the Chair for the History of the KPSS, History Department MGU, reported on research being conducted at the chair. A.A. Shaydulin, Head of the Chair for the History of the KPSS, Kazan' University imeni V.I. Ul'yanov (Lenin) outlined in detail the scientific work of every member of the chair,

Card 1/2

In the Scientific-Technical Council. In the Section of the KPSS History

mentioning the names of the instructors A.A. Shishkin, I.N. Yudin, M.A. Kibardin, A.M. Isakov, Docent Sh.M. Yenaleyev and others.

Card 2/2



L 8854-66 EWT(d)/EWT(m)/EWP(v)/EWP(t)/EWP(k)/EWP(h)/EWP(b)/EWP(l)/EWA(c) JD/HW

ACC NR: AP5026483 SOURCE CODE: UR/0286/65/000/019/0009/0009

INVENTOR: Granovskiy, S. P.; Pyatunin, A. I.; Yefanov, V. I.; Yakovlev, S. A.; Arutyunov, I. G.; Revunov, V. A.; Zemskov, A. A.; Shofman, L. A.

ORG: none

TITLE: Production of seamless tubes. Class 7, No. 175026. [Announced by All-Union Scientific Research and Design-Planning Institute of Metallurgical Equipment (Vsesoyuznyy nauchno-issledovatel'skiy i proyektno-konstruktorskiy institut metallurgicheskogo mashinostroyeniya)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 19, 1965, 9

TOPIC TAGS: tube, seamless tube, thin wall tube, light alloy tube, metal rolling

ABSTRACT: This Author Certificate introduces a method for making seamless tubes, e.g., light-alloy tubes from rolled, forged, or cast tube shells. To obtain thin-wall tubes of large diameter with precise dimensions and a clean surface, the tube shell is first hot rolled with expansion in a helical mill and then cold rolled with elongation in a helical rolling mill. [AZ]

SUB CODE: 13/ SUBM DATE: 12Feb64/ ATD PRESS: 4152

Card 1/1 UDC: 621.774.3

AID P - 4885

Subject : USSR/Aeronautics - Helicopters

Card 1/1 Pub. 58 - 5/14

Authors : Malinovsliy, G. and B. Zemskov

Title : New records of the Helicopted Mi-4

Periodical : Kryl. rod., 7, 8-9, Jl 1956

Abstract : The first part of the article narrates a flight of the Mi-4, with a load of 1000 kgs, to the altitude of 6048 m., a performance registered as a world record. The second part, under the separate title "We are Satisfied with the Results", describes a 500 km. speed-record flight of the same helicopter, accomplished at the average ground speed of 187.24 km/h. One close-up, 2 photos.

Institution : None

Submitted : No date

L 6370-66

ACC NR: AP5026751 SOURCE CODE: UR/0286/65/000/017/0025/0026

INVENTOR: Artemenko, Ye. P.; Politova, A. Ye.; Polchaninov, V. A.; Nekroyenko, N. V.; Zemskov, B. A.

TITLE: A multisectional collapsible girder post. Class 21, No. 174226 [announced by Organization of the Ministry of Defense SSSR (Organizatsiya Ministerstva oborony SSSR)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 17, 1965, 25-26

TOPIC TAGS: hoisting equipment, construction machinery

ABSTRACT: This Author's Certificate introduces a multisectional collapsible girder post of improved operational reliability based on Author's Certificate No. 158606. A hoisting carriage is fastened in a gap in the load chain by means of a hinged link which is connected with a pivoted block used for forced collapse of the post sections. This carriage contains a spring-return catch made in the form of a hinged lever with a triangular groove and trihedral teeth in the free end.

UDC: 621.396.676

Card 1/2

0907-0152

L6370-66

ACC NR: AP5026751

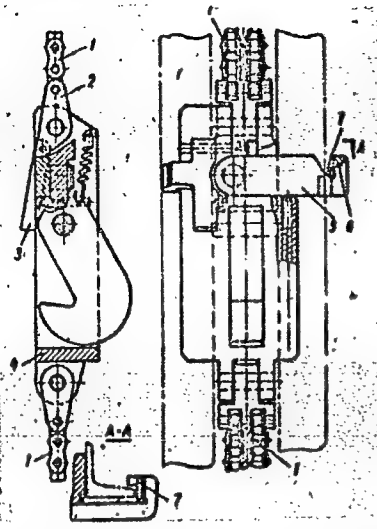


Fig. 1. 1--load chain; 2--hinged link; 3--pivoted block; 4--hoisting carriage; 5--catch lever; 6--groove in the lever; 7--trihedral teeth

SUB CODE: GO,IE/ SUBM DATE: 22Aug64/ ORIG REF: 000/ OTH REF: 000

nw

Card 2/2

L 04282-67

ACC NR: AP6013246 SOURCE CODE: UR/0413/66/000/008/0035/0036

AUTHORS: Artemenko, Ye. P.; Zemskov, B. A.; Polchaninov, V. A. 34

ORG: none B

TITLE: Telescopic multisectional truss mast. Class 21, No. 180649

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 8, 1966, 35-36

TOPIC TAGS: antenna mast, automatic machine, antenna engineering

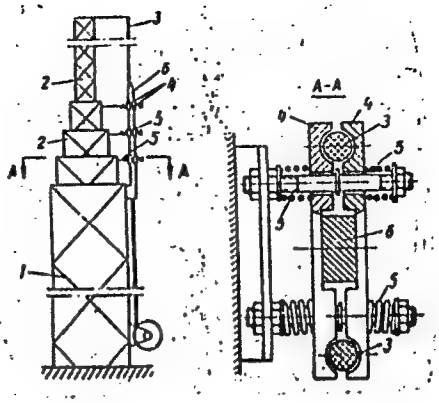
ABSTRACT: This Author Certificate presents a telescopic multisectional truss mast after Author Certificate No. 158606. An antenna located in the upper section of the mast is connected by feeder cables to a transmitter and a receiver placed on an automatic mechanism. To fix or loosen the feeder cables automatically while extending or bringing together the sections of the mast, a holding device is fixed on every section (see Fig. 1). This device consists of two lugs with openings. The lugs are compressed together by springs; the immovable section carries a sharp wedge. The lugs are so disposed that the sharp wedge passes through one of the openings between them, while the feeder cables pass through the remaining openings.

Card 1/2 UDC: 621.396.676

L 04282-67

ACC NR: AP6013246

Fig. 1. 1 - immovable section; 2 - movable sections; 3 - feeder cables; 4 - lugs with openings; 5 - springs; 6 - sharp wedge



Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 19Mar65

Card 2/2

L 43780-66 EWT(d) BC

ACC NR: AP6021979 (N) SOURCE CODE: UR/0308/66/000/003/0021/0022

AUTHOR: Zemskov, G.

45
B

ORG: none

TITLE: Attachment for navy radar "Don"

SOURCE: Morskoy flot, no. 3, 1966, 21-22

TOPIC TAGS: radar navigation, radar scanning, radar noise, RADAR RANGEFINDING

ABSTRACT: To improve the effectiveness of radar "Don" stations, it is proposed that an attachment be used which will ensure the sound and light indication for a specific range preset by means of a seascan. The attachment circuit consists of the following stages: 1) seascan pulses amplifier and blocking-generator of signal zone width; 2) cathode followers; 3) coincidence stage; 4) video pulse amplifier and target blocking-oscillator; 5) decoupling and actuating stages; 6) multivibrator; 7) light (sound) signaling indicator. Testing has proved that the attachment operates reliably even with targets located on the edge of radar reception. Orig. art. has: 2 figures.

[DWT]

SUB CODE: 09/ SUBM DATE: none/

L3 Card 1/1

UDC: 621.396.967.004.67

ZEMSKOV, G.G.

Vibrational piezoelectric transducer. Avtom. i prib. no.3: 61-62 Jl-S '64. (MIRA 18:3)

ZEMSKOV, G.G.

Vibratory induction pickup for automatic control of linear dimensio of parts. Avtom. i prib. no. 1:56-57 Ja-Mr '64. (MIRA 17:5)

ZEMSKOV, G.I.

KISELEV, V.M., gornyy inzhener; ZEMSKOV, G.I., gornyy inzhener.

Special characteristics of reinforced linings in deep mine shaft.
Gor. zhur. no.7:57-59 Jl '57. (MLRA 10:8)

1. Krivbassproyekt.
(Shaft sinking) (Reinforced concrete)

S/194/62/000/012/060/101
D295/D308

AUTHORS: Zemskov, G. V., Dombrovskaya, Ye. V., Yarkina, V. T., Gushchin, L. K. and Parfenov, A. K.

TITLE: The influence of ultrasound on the nitriding process

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 12, 1962, 15, abstract 12-5-29 sh (Nauchn. zap. Odessk. politekhn. in-t, 35, 1961, 90-96)

TEXT: Experiments were carried out to study liquid nitriding in a salt bath through which ammonia was passed. Samples of 35X10A (35KhYuA) steel cylinders of 20 mm diameter and 10 mm height were subjected to nitriding. The temperature of the process was 550°C and the frequency of ultrasonic irradiation 18 - 35 kc/s. Gaseous nitriding experiments were carried out in an electric oven with ammonia at a pressure of 45 - 55 mm oil column; the samples were screwed into a concentrator. The data obtained show that the use of ultrasonic treatment enables the duration of the process to be reduced by a factor of 1.5. The hardness of the nitrided layer and

Card 1/2

ZEMSKOV, G. V.

"Carburization of Steel With Natural Gas." Sub 29 Jun 51, Moscow Mechanics Inst

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55

POGODIN-ALEKSEYEV, G.I., professor; ZEMSKOV, G.V., dotsent.

Case-hardening of steel by means of natural gas. Vest.mash. 33 no.9:65-68 S '53. (MLRA 6:10)
(Cementation (Metallurgy))

ZEMSKOV, G. V. and POGODIN-ALEKSEYEV, G. I.

"Basic Parameters of the Process of Gas Cementation," p. 35 of the book "Problems on Strength and Deformation of Metals and Alloys," released by the Moscow Engineer-Physics Inst., Mashgiz, 1954

TABCON D 342613, 24 Oct 55

ZEMSKOV, G. V.

PHASE I BOOK EXPLOITATION 290

Pogodin-Alekseyev, G.I., Doctor of Technical Sciences, Professor, and Zemskov, G.V., Candidate of Technical Sciences, Docent

Gazovaya tsementatsiya stali (Gas Carburizing of Steel) Kiyev, Mashgiz, 1957. 111 p. 5,000 copies printed.

Reviewer: Lakhtin, Yu. M., Doctor of Technical Sciences. Professor; Ed.: Braun, M.P., Doctor of Technical Sciences, Professor; Ed. of Publishing House: Leuta, V.I., Engineer; Tech. Ed.: Rudenskiy, Ya. V.

PURPOSE: This book is intended for engineering and technical personnel of machine-building plants.

COVERAGE: This book explains the general mechanics of carbon diffusion in iron, as well as the principles of the steel carburizing process using artificially prepared gas mixtures and natural gas. The effect of basic factors of the carburizing process (temperature, time, velocity of the gas stream, etc.) on

Card 1/5

the carburized case depth and the carbon concentration in the diffused layer are discussed. The principal considerations concerning gas carburizing conditions in a plant, and the structure and properties of carburized steel are given. There are 117 references, 100 of which are Soviet, 16 are English, and 1 is German.

TABLE OF CONTENTS:

Gas Carburizing of Steel 290

Card 4/5

AVAILABLE: Library of Congress

VK/ksv
6-18-58

Card 5/5

1.1800

29465
S/137/61/000/008/019/037
A060/A101

AUTHORS: Zemskov, G. V., Kosinskiy, I. V.

TITLE: Chromosiliciding under heating by high frequency current

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 8, 1961, 44-45, abstract 8D298 ("Nauchn. zap. Odessk. politekhn. in-t.", 1960, 24, 9-13)

TEXT: Chromosilicating was carried out on specimens 10 mm diameter and 30 mm long of steel 10, 20, У10 (U10), and pig iron grades Cr 18 - 36 and Cr 24-44, at temperatures of 1,050 - 1,100°C with heating for a period of 10 and 20 min in powder mixtures having two compositions: 1) low-carbon Fe-Cr grade Хр0 (Khr0) (ferrochrome) 90% and Fe-Si grade Cu 75 (ferrosilicon) 10%, the inert mass was provided by adding ground chamotte powder 30% by weight of the ferrous alloys; 2) Cr and Si alloy powder with 5% Si content obtained from an induction furnace was crushed down to grain size 0.5 mm in one case with HCl treatment (5% by weight of the ferrous alloys), in the other case with the addition of ammonium chloride. The second method is more practical. The thickness of the layer obtained by high frequency current heating of steel specimens is equal to 0.2 - 0.3 mm, and of pig iron specimens - 0.1 mm, while under heating in an

Card 1/2

1.1800 1521, 1454, 1045

29464
S/137/61/000/008/018/037
A060/A101

AUTHORS: Zemskov, G. V., Dombrovskaya, Ye. V., Grishina, N. V.

TITLE: High-temperature cyaniding in sintered mixtures

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 8, 1961, 44, abstract 8D296 ("Nauchn. zap. Odessk. politekhn. in-ta". 1960, 26, 31-37)

TEXT: The influence was studied of N upon the process of cementation at temperatures of 950 - 1,050°C which are now being introduced into industry for the sake of intensifying the process and raising the productivity of thermal furnaces. The cementation was carried out in a fresh peaty carburizer and in a carburizer with an addition of 13 and 25% of red potassium ferrocyanide $K_3Fe(CN)_6$ at temperatures of 900, 950, 1,000, and 1,050°C for periods of 0.5; 1; 2; 3 hours. In order to ascertain the influence of diffusion counterflows of C and C + N upon the depth of the layer, the cementation of hollow conical specimens of steel 3 was carried out. On the basis of the results of the microstructure analysis it is concluded that at high-temperature cementation N accelerates the diffusion of C, while the nitrogen-containing addition of $K_3Fe(CN)_6$ to the sintered carburizer favors an increase in the depth of eutectoidal layer; its higher

Card 1/2

29464
S/137/61/000/008/018/037
A060/A101

High-temperature cyaniding in sintered mixtures

content increases the depth of the transeutectoidal zone. Under simultaneous diffusion of C + N the diffusion of C is accelerated independently of the direction of the diffusion front (both on the inner and outer surfaces). Under simultaneous diffusion of N + C the acceleration of the C diffusion occurs due to the activation of the sintered carburizer on account of the formation of a CN compound. The raising of the cementation temperature from 900 to 1,000 and 1,050°C while maintaining the soaking for 3 hours increases the depth of the cementation layer by a factor of 2 - 3.5. There are 14 references.

A. Babayeva

[Abstracter's note: Complete translation]

Card 2/2

27923 S/123/61/000/017/009/024
A004/A101

1.4000

AUTHORS: Zemskov, G. V., Parfenov, A. K.

TITLE: Treatment of high-speed steel milling cutters in superheated steam

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 17, 1961, 74, abstract 17B481 ("Nauchn. zap. Odessk. politekhn. in-t", 1960, v. 26, 44-47)

TEXT: The authors investigated the effect of the treatment duration (30-180 minutes) in superheated steam at 540-560°C and the cutting conditions on the life of milling cutters made from P9 (R9) grade steel. The service life of milling cutters treated in superheated steam exceeds that of cutters having been heat-treated in the ordinary way by 25-85% when the 45 grade steel is milled, and by 45-100% during the milling of 40X (40Kh) grade steel. The authors recommend a duration of the treatment of 60 minutes. The increase of the tool life after steam treatment is connected with the change in the formation conditions of built-up edge owing to the formation of a Fe_3O_4 film on the surface. There are 4 figures and 6 references.

N. Il'ina

[Abstracter's note: Complete translation]

Card 1/1

S/129/61/000/003/007/011
E073/E335

18.7530 1145 also 1454, 1573

AUTHORS: Zemskov, G.V., Gushchin, L.K., Dombrovskaya, Ye.V., Parfenov, A.K. and Yarkina, V.T.

TITLE: Nitriding of Steel Under the Effect of Ultrasonics

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, 1961, No. 3, pp. 40 - 42

TEXT: The authors studied the nitriding of steel under the effect of ultrasonics in gaseous and liquid media. For the gas nitriding, steel 35XIOA (35KhYuA) was used in the heat-treated state (H_{RC} = 28-30). Prior to nitriding the specimens were carefully degreased with alcohol. The ammonia was always fed into the furnace at 200 °C to prevent excitation. The degree of dissociation of the ammonia during nitriding (at 500 - 550 °C) equalled 40%. At the termination of the process the specimens were cooled to 200 °C in ammonia. The process was carried out with and without ultrasonics. Liquid nitriding was in a salt bath (calcium chloride 48%, barium chloride 31%, sodium chloride 21%) and ammonia was placed into it. The process was

Card 1/5

S/129/61/000/003/007/011
E073/E335

Nitriding of Steel ....

carried out at 550 - 560 °C with a holding time of 9 hours and an ammonia pressure of 330 - 360 mm oil column. The ultrasonics were produced by a 2.5 kW 18-35 kc/s tube oscillator and they were transmitted to the bath by a "Permendur" magnetostriction vibrator. The results were evaluated by measuring the hardness and the microhardness of the surface. Fig. 1 shows the influence of ultrasonics on the change of microhardness along the cross-section of a layer nitrided at 550 °C, H_μ versus distance from the surface (Curves 1 - without ultrasonics; Curve 2 - with ultrasonics). The plots, Fig. 1, from left to right, related to the nitriding times of 2, 4, 6, 8, 10 and 15 hours, respectively. The ultrasonics brought about an increase in hardness and depth of penetration of the nitrogen, ensuring a stable increase in the microhardness in the basic zone of the nitrided layer. For process durations of 6 hours and more, the microhardness of specimens treated with ultrasonics was appreciably higher than that of those not treated. The use of ultrasonics enables reducing the duration of the process by a factor of 1.5. The change in the

Nitriding of Steel ....

microhardness brought about by liquid nitriding using ultrasonics (Curve 1) and without using ultrasonics (Curve 2) is plotted in Fig. 3 (hardness, H_μ versus distance from the surface). As a result of ultrasonics treatment the depth and hardness of the diffusion layer are increased.
There are 3 figures.

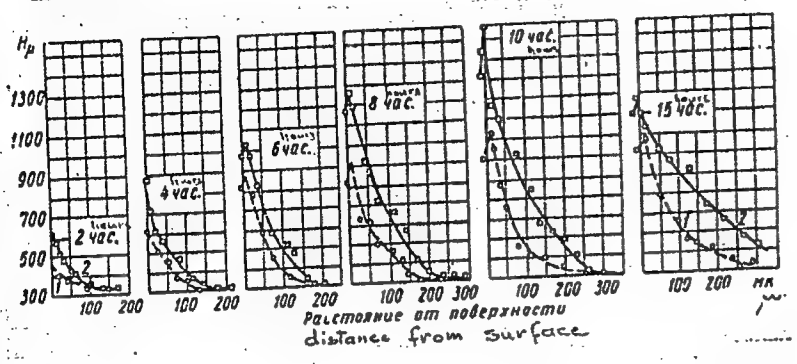
ASSOCIATION: Odesskiy politekhnicheskiy institut
(Odessa Polytechnical Institute)

Card 3/5

S/129/61/000/003/007/011
E073/E335

Nitriding of Steel ....

Fig. 1:

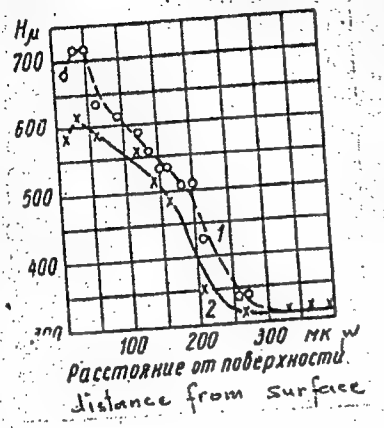


Card 4/5

S/129/61/000/003/007/011
E073/E335

Nitriding of Steel ....

Fig. 3:



Card 5/5

28156

S/122/61/000/003/009/013
D241/D305

1950

AUTHORS: Zemskov, G.V., Candidate of Technical Sciences, Docent, Smekh, Ye.V., Gushkin, L.K., and Khmelevskaya, M. Ye., Engineers

TITLE: Ultrasonic cleaning of steel from scales

PERIODICAL: Vestnik mashinostroyeniya, no. 3, 1961, 59-61

TEXT: The authors carried out research on the effect of ultrasonics on cleaning steel wire after drawing and patenting as well as on clock files and ordinary files after their hardening in oil. Pickling was carried out in a stainless steel bath. The ultrasonic vibrations were produced by a valve generator of 2.5 KW and employing a band of frequencies of 18 - 50 Kc. Nickel and "permendure" (K50F2) magnetostrictive vibrators mounted below and on the side of the bath produced the vibrations. No effect of frequency variation on the speed of etching was observed. The wire was treated in bundles, whereas the files were etched in bunches. Use was made of the following media: Water, a solution of sulphuric

Card 1/5

Ultrasonic cleaning of steel ...

and hydrochloric acids, their mixtures and solutions of culinary salt and alkalis. The relationship between the time of cleaning and the composition, concentration and temperature of solutions was established. The effect of the number of rows of wire in a bundle was also investigated. For comparison purposes experiments were carried out without the ultrasonics. Fig. 1 illustrates the relationship between the time of etching a patented wire in steel 70 and the concentration of acids. It can be seen from the graphs that the duration of etching is reduced by tens of times, and it reaches the minimum with a concentration that is lower than in normal etching. This allows a less frequent renewal of solutions. The effect of temperature is indicated graphically also. With lower concentrations of acids there is a greater effect of temperature on the speed of etching. The introduction of hydrochloric acid into the sulphuric acid solution increases the speed of pickling and produces a clearer metal surface. The most suitable solutions are the 10% sulphuric or hydrochloric acid with a content of 5% NaCl. The effect of screening due to the number of rows of wire in the bundles is also shown. If the article is preliminarily

Card 2/ 5

28156

S/122/61/000/003/009/013
D241/D305

Ultrasonic cleaning of steel ...

treated during 5-10 minutes in a solution of sulphuric or hydrochloric acids and then cleaned by ultrasonics in water, the scales will be removed in 1 - 3 minutes which is a few times slower than in a solution of acid. Cleaning in water promotes rinsing of the etching solution. This can lead to a reduction of brittleness due to hydrogen. The mechanics of ultrasonic removal of scales is then described. There are 4 figures and 2 references: 1 Soviet-bloc and 1 non-Soviet-bloc.

Card 3/5

S/137/62/000/007/070/072
A160/A101

AUTHORS: Zemskov, G. V., Kogan, R. L., Smekh, Ye. V., Zdanovich, V. L., Gushchin, L. K., Kostenko, A. V.

TITLE: The problem of hardening steel in an ultrasonic field

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 7, 1962, 109, abstract 7I740 ("Nauchn. zap. Odessk. politekhn. in-t", 1962, 37, 41 - 44)

TEXT: The investigation of the effect of an ultrasonic field on the process of hardening was carried out with У 8 (U8) and Х 12 Ф (Kh12F) steels. For comparison reasons, experiments were made by quenching these steels in water with and without the ultrasonic field. The U8 steel was hardened from 800 - 820°C, the intensity of the ultrasonic field was within 1 - 2 va/cm^2, and the frequency of the ultrasonic oscillations - 23 kilocycles. The Kh12F steel was quenched from 1,130°C in oil or in water with and without the action of the ultrasonic field. The subsequent triple tempering was carried out at 510 - 530°C for 1 hour and the steel cooled in the open air. It was determined that the hardenability and the hardness of the U8 steel increase (Rc increases from 37 - 42 to 54 - 60 in a

Card 1/2

S/137/62/000/007/070/072
A160/A101

The problem of hardening steel in an ultrasonic field

layer with a depth of 1.5 - 2 mm) when quenching in an oil bath with the use of ultrasound. This applies for samples with a diameter of up to 20 mm. The use of ultrasonic oscillations during the quenching of the Kh12F steel from 1,130°C and the cooling in oil with a subsequent triple tempering increases the microhardness by 30 kg/mm^2. There are 6 references.

A. Babayeva

[Abstracter's note: Complete translation]

Card 2/2

ACCESSION NR: AP4020252 S/0129/64/000/003/0061/0063

AUTHORS: Zemskov, G. V.; Kaydash, N. G.; Praven'kaya, L. L.

TITLE: Boronizing of iron and steel in vacuum

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 3, 1964, 61-63

TOPIC TAGS: iron boronizing, steel boronizing, vacuum boronizing

ABSTRACT: This study is an analysis of vacuum boronizing of iron and steel. The boronizing was done in a TGB-1M vacuum furnace at a pressure of 3×10^{-3} mm Hg in a mixture of boron carbide and borax. Active boron which is formed in the reaction mixture at high temperatures diffuses into the metal. The boron contacts the article's surface primarily in a vaporized state. The boronizing of armco-iron and 45 steel in mixtures of varying composition was carried out at 900C for 4 hr. The greatest boride layer thickness is attained with a mixture containing 16—18% borax. The thickness of the boride layer depends upon duration and temperature of the saturation process

Card 1/2

ACCESSION NR: AP4020252

and carbon content in the steel. When the duration of the process is extended and temperature is increased, the thicknesses of the boride layer increase. The thicknesses decrease with an increase in the percentage content of carbon in the steel. The most dense boride layers are obtained at 900—1000C for 6—9 hr. Orig. Art. has: 2 figures and 1 table.

ASSOCIATION: Odesskiy politekhnicheskiy institut (Odessa Polytechnical Institute)

SUBMITTED: 00 ATD PRESS: 3046 ENCL: 00

SUB CODE: MM, GC NR REF SOV: 004 OTHER: 000

Card 2/2

ZEMSKOV, G.V.; GUSHCHIN, L.K.

Chromizing steel in vacuum with heating by high frequency currents. Metalloved. i term.obr.met. no.10:26-28 O '65.
(MIRA 18:11)

1. Odesskiy politekhnicheskiy institut.

L 14993-66 EWT(m)/EWP(w)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/ETC(m)-6

ACC NR: AP5028569 (N) SOURCE CODE: UR/0126/65/020/005/0788/0790

IJP(c) MJW/JD/HW/JG/WB/EM/MJW(CL)

AUTHOR: Zemskov, G. V.; Konev, V. N.; Kogan, R. L.; Dombrovskaya, Ye. V.; Kostenko, A. V.

ORG: Odessa Polytechnic Institute (Odesskiy politekhnicheskiy institut); Ural gosuniversitet im. A. M. Gor'kiy (Ural'skiy gosuniversitet)

TITLE: Oxidation of nickel alloys in atmospheres containing sulfur

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 5, 1965, 788-790

TOPIC TAGS: nickel alloy, metal oxidation, metal surface, metal scaling, metallographic examination, x ray analysis

ABSTRACT: The effect of oxidation of ZhC6-K nickel alloy in sulfur atmospheres was studied. It had been previously observed that in such environments the heat resistance of nickel decreased as a result of the formation of nickel sulfides with low melting points; in addition, these sulfides form eutectics with nickel and its oxides. Chromium is known to retard this sulfide formation but does not prevent it. For the experiments, samples were cut from turbine blades which had operated for

UDC: 669.24 : 620.193.4

Card 1/3

L 14993-66

ACC NR: AP5028569

3

various periods at temperatures of 800-900°C in an atmosphere containing gaseous sulfur. Metallographic, x-ray and chemical analysis were performed. The scale was removed from the blades and cylindrical powder samples were made for the x-ray study in which $K_{\alpha,\beta}$Cr radiation was used. The nickel content was determined by the weight method while the sulfur content was established by the iodometric method. A microstructure of the base metal and of the blades in which the surfaces of the blades revealed scale formation is shown. Lowered microhardness was the result of alloying elements diffusing out to the grain boundaries. Chemical analysis of the layer showed a 1% sulfur content. The x-ray analysis of the layer showed it to have a crystal lattice of the NiO type and a phase of the spinel type. The mechanism for the formation of oxide layers in sulfur containing atmospheres was proposed for the alloy ZhC6-K. The spinel phase is formed from the following reaction:

$$NiO + Cr_2O_3 = NiCr_2O_4.$$

This phase can also alloy with other elements in the metal. Once the full scale forms, internal oxidation occurs. The oxygen diffuses faster along the grain boundaries and forms Cr_2O_3 due to the greater affinity of Cr for oxygen. In the

Card 2/3

L 14993-66

ACC NR: AP5028569

center of the grain the Cr content becomes depleted, and the remaining nickel is left to form NiO. The solution of sulfur in the NiO lattice contributes to the increased oxidation of the alloy since the sulfur intensifies the reaction. The scale structure finally becomes that of NiO with sulfur dissolved within and the spinel $NiCr_2O_4$. Orig. art. has: 3 figures.

SUB CODE: 11,20/ SUBM DATE: 19Jan65/ ORIG REF: 003/ OTH REF: 002

Card 3/3

ACC NR: AP6004197 (A) SOURCE CODE: UR/0114/66/000/001/0034/0035

AUTHOR: Zemskov, G. V. (Candidate of technical sciences; Docent); Kogan, R. L. (Candidate of technical sciences; Docent); Kostenko, A. V. (Engineer); Khmelevskaya, M. Ye. (Engineer)

ORG: none

TITLE: Titanium-silicon and titanium-aluminum coatings of nickel-base alloy

SOURCE: Energomashinostroyeniye, no. 1, 1966, 34-35

TOPIC TAGS: nickel, nickel alloy, nickel alloy coating, titanium silicon coating, titanium aluminum coating, coating oxidation, oxidation resistance, oxidation resistant coating, coating corrosion, gas corrosion, corrosion resistance/ZhS6-K nickel alloy

ABSTRACT: An attempt has been made to improve the resistance of ZhS6-K nickel-base alloy to gas corrosion at 850—900C in an atmosphere containing sulfur and sea-water vapors by means of titanium-silicon and titanium-aluminum diffusion coatings. Coating was done by pack cementation with coating elements used simultaneously or serially. It was found that in simultaneous impregnation, the depth of the diffusion layer decreases with an increase of titanium in the mixture. At a titanium content of 90—95%, mainly titanium diffuses while at a titanium content of 30—35%, silicon or aluminum diffuse. Best results in simultaneous impregnation were obtained at 900C

Card 1/2 UDC: 669.65:669.295.001.5

L 14573-66

ACC NR: AP6004167

with a mixture containing 60—80% Ti. The stepwise impregnation produced better results than the simultaneous impregnation, especially when silicon or aluminum were applied first. Both silicon-titanium and aluminum-titanium coatings greatly increased the resistance of ZhS6-K alloy to gas corrosion. In tests at 900C, after 15 hr the uncoated alloy was corroded to a depth of 1000—1500μ and coated alloy to a depth of only 100μ. Orig. art. has: 4 figures. [ND]

SUB CODE: 13/ SUBM DATE: none/ ORIG REF: 002/ ATD PRESS: 4189

FW

Card 2/2

ZEMSKOV, G.V.; SHULENOK, P.F.

Calorizing and aluminum-silicide coating in the molten state of titanium. Zashch. met. 2 no.1:101-103 Ja-F '66.
(MIRA 19:1)

1. Odesskiy politekhnicheskiy institut. Submitted June 7, 1965.

ZEMSKOV, G.V.; KONEV, V.N.; KOGAN, R.L.; DOMBROVSKAYA, Ye.V.; KOSTENKO, A.V.

Oxidation of a nickel alloy in an atmosphere containing sulfur. Fiz.-met. i metalloved. 20 no.5:788-790 N '65. (MIRA 18:12)

1. Odesskiy politekhnicheskiy institut i Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo. Submitted January 19, 1965.

ACC NR: AP6010100 SOURCE CODE: UR/0129/66/000/003/0062/0064

AUTHOR: Zemskov, G. V.; Mel'nik, P. I.

ORG: none

TITLE: Diffusion impregnation with beryllium

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 3, 1966, 62-64

TOPIC TAGS: iron, stainless steel, molybdenum, metal surface impregnation, beryllium impregnated iron, beryllium impregnated stainless steel, beryllium impregnated molybdenum impregnated layer structure, layer hardness, layer oxidation resistance/ Kh18N9T steel, ZhS6-K alloy

ABSTRACT: Commercial iron, Kh18N9T steel, ZhS6-K alloy, and molybdenum were impregnated with beryllium in a powder mixture containing 65%Be, 30%Mg, and 5%$MgCl_2$. The impregnation was done at 800—1250C for up to 14 hr. The thickness of the impregnated layer on all materials increased with increasing temperature and duration of the process. The microstructure of the impregnated layer on iron consisted of columnar crystals; the top portion consisted of an unetchable, white brittle layer of Be_2Fe_3 iron beryllide with a hardness of 1400—1500; the next portion consisted of a solid solution of beryllium in α-iron and of iron beryllides along the grain boundaries and within grains. The transition zone consisted of a solid solution of beryllium in iron with a hardness varying from 470 to 150 along the thickness. The impregnated layer on

Card 1/2

L 20627-66

ACC NR: AP6010100

Kh18N9T steel had a hardness of about 750, which gradually decreased to about 100 along the layer thickness. The microstructure of the impregnated layer on the ZhS6-K alloy consisted of four zones. In the surface zone, which has a dispersed structure and a hardness of 1400, BeNi nickel beryllide and probably other unidentified beryllides are formed. The next zone, closer to the base, also has a dispersed structure and a hardness of 1135. The last two zones have an icicular structure and the same hardness of 600. The impregnated layer on molybdenum has two clearly defined zones: the surface zone, consisting of MoB_{12} compound with a harness of 2640—2040, and the lower zone, consisting of MoB_2 compound with a hardness of 2040—90. The beryllium-impregnated layers on iron, ZhS6-K alloy, and molybdenum exhibited an increased oxidation resistance in air at 800—1200C. The beryllium-impregnated layer on Kh18N9T steel did not improve the oxidation resistance of the steel, probably because of a low concentration of beryllium at the surface layer. Orig. art. has: 4 figures. [MS]

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 002/ OTH REF: 001/ ATD PRESS: 4224

Card 2/2

L 15646-66 EWT(m)/EPF(n)-2/EWP(t)/EWP(b) IJP(c) JD/WW/JG/WB
ACC NR: AP6003327 (N) SOURCE CODE: UR/0365/66/002/001/0101/0103

AUTHOR: Zemskov, G. V.; Shulenok, P. F.

ORG: Odessa Polytechnic Institute (Odesskiy politekhnicheskiy institut)

TITLE: Hot-dip method of coating titanium with aluminum or aluminum-silicon alloy

SOURCE: Zashchita metallov, v. 2, no. 1, 1966, 101-103

TOPIC TAGS: titanium, titanium alloy, metal coating, ~~oxidation inhibitor~~ protective coating, ~~titanium~~ metal oxidation, ~~oxide film~~ corrosion resistance, corrosion protection, aluminum, silicon

ABSTRACT: Protection of titanium and titanium alloys against oxidation and gas absorption by aluminum or aluminum-silicon coating deposited by hot dipping has been investigated. To prevent the dissolution of titanium in liquid aluminum, the titanium surface was oxidized after machining by heating to 400—550C and holding for 10—30 min (for coating with aluminum) or to 450—650C (for coating with aluminum-silicon alloy). Oxidized specimens were then immersed into a molten

were obtained in titanium oxidized at 400—550C for 10—30 min and held 20—90 min

Card 1/2 UDC: 669.718

L 15646-66

ACC NR: AP6003327

in an aluminum bath at 830—850C or for 8—30 min in an aluminum-silicon bath, depending on the silicon content (from 5 to 30% Si). This was followed by diffusion annealing at 850—900C for 3—4 hr. The aluminum-coated specimens had a much higher oxidation resistance at 700—1300C than the uncoated. Silicon at contents up to 12% additionally increased the oxidation resistance of coatings; further increases in silicon reduced the oxidation resistance. At 1000C the weight loss of uncoated titanium amounted to 15 mg/cm^2/hr compared to 0.49 mg/cm^2/hr for aluminum-coated titanium or to 0.1 mg/cm^2/hr for titanium coated with aluminum containing 12% silicon. Generally, coating provides long-lasting protection against oxidation at temperatures up to 1000C and at 1200—1300C for 3 hr. Orig. art. has: 1 figure.

[AZ]

SUB CODE: 11, 13/ SUBM DATE: 07Jun65/ ORIG REF: 002/ ATD PRESS: 4201

L 29356-66 EWP(k)/EWT(m)/EWP(t)/ETI IJP(c) JW/JD/HW/JG

ACC NR: AP6016594 (A, N) SOURCE CODE: UR/0129/66/000/005/0052/0055

AUTHOR: Zemskov, G. V.; Shulenok, P. F.

ORG: Odessa Polytechnic Institute (Odesskiy politekhnicheskiy institut)

TITLE: A new technique for chemical-thermal treatment of transition metals in molten aluminum-base alloys

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 5, 1966, 52-55

TOPIC TAGS: refractory metal, titanium, niobium, molybdenum, transition metal, metal oxidation, oxidation resistance, oxidation resistant coating, aluminum alloy coating/VN1 niobium, VM1 molybdenum

ABSTRACT: A hot-dip method for applying aluminum-alloy coatings on transition metals such as titanium, niobium, and molybdenum has been developed. The surface of transition metals should be activated to ensure a satisfactory adhesion of the coating to the base metal. Several methods of activation were tested. The best results were obtained by dipping into a fluoride-base flux, and by oxidation in air at elevated temperatures, 400—550C for VT1 titanium, 250—350C for VN1 niobium, and 350—450C for VM1 molybdenum. The latter method ensures a satisfactory continuity of the

Card 1/2 UDC: 621.785:53.669.77/78

L 29356-66

ACC NR: AP6016594

850—900C and aluminum-silicon-molybdenum alloy coating, after 100 hr at 1000—1100C; aluminum-silicon-molybdenum-niobium-chromium alloy coating was only slightly damaged after 200 hr at 1250—1300C. Aluminum-silicon-molybdenum-chromium alloy coating protects VM1 molybdenum at 1500C for at least 30 hr. The protective ability of these coatings may be utilized also in hot plastic working of refractory metals. Orig. art. has: 2 figures and 3 tables. [DV]

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 006/ OTH REF: 002/ ATD PRESS: 5009

Card 2/2

L 44022-66 EWT(m)/EWT(m)/T/EWP(t)/
ACC NR: AP6030864 ETP(c) ID/HW/JG/WB/JH SOURCE CODE: UR/0365/66/002/005/0576/0580

AUTHOR: Zemskov, G. V.; Kogan, R. L.; Dombrovskaya, Ye. V.; Kostenko, A. V.; Shevchenko, I. M.; Koss, Ye. V.; Fadeyeva, E. V.; Khmelevskaya, M. Ye.; Mikotina, N. F.

ORG: Odessa Polytechnical Institute (Odesskiy politekhnicheskiy institut)

TITLE: Protective diffusion coatings of nickel alloy

SOURCE: Zashchita metallov, v. 2, no. 5, 1966, 576-580

TOPIC TAGS: nickel chromium alloy, aluminum containing alloy, titanium containing alloy, tungsten containing alloy, ~~alloy~~ protective coating, ~~alloy~~ corrosion resistance, diffusion coating alloy, alloy oxidation resistance/ZhS6-K alloy

ABSTRACT: A series of diffusion coatings were tested for protection of ZhS6-K nickel-base alloy (0.13—0.20% carbon, 10.5—12.5% chromium, 5—6% aluminum, 2.5—3% titanium, 2.5—3% tungsten, 4.5—5.5% molybdenum, 0.13—0.20% boron) against gas corrosion in a mixture of products of sulfurous fuel combustion and sea water vapors after all attempts to improve alloy oxidation resistance by alloying failed. Alloy specimens were diffusion coated with one or two elements used simultaneously or one after the other. The coating was done by a pack cementation at 900—1000C for 10 hr. Chromium, aluminum, silicon, titanium, boron, cerium, beryllium and magnesium were used as single-element coatings. Chromium with titanium, silicon, aluminum, or boron; aluminum with boron, cerium, or titanium; titanium with silicon or boron; manganese with boron;

Card 1/4 UDC: 621.793.4

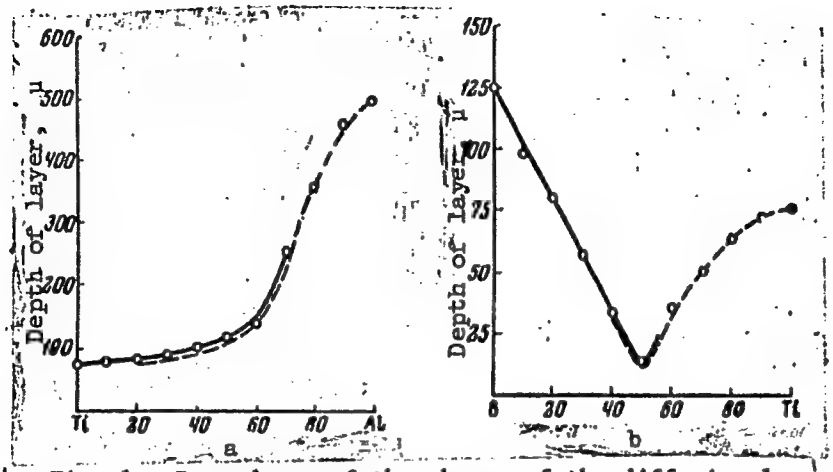


Fig. 1. Dependence of the change of the diffusion layer depth upon the content of elements in the mixture

a - Aluminum-silicon impregnation; b - boron-titanium impregnation.

a

0

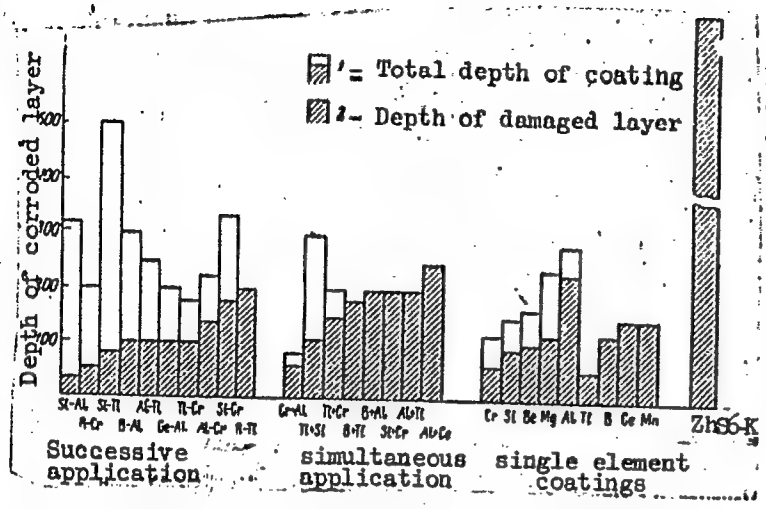


Fig. 2. Depth of corrosion in coated and uncoated ZhS6-K alloy.

cerium with boron; and silicon with aluminum were used for binary coatings. Corrosion tests were done in combustion products containing 0.74% and 0.11% sea water at 900C for 15 hr. It was found that all the coatings tested have a higher corrosion resistance than the uncoated alloy (see Fig. 1). Binary coatings protect the alloy more efficiently than single-element coatings, especially with the consecutive method of

L 44077-66

ACC NR: AP6030864 O

application. Coatings obtained by this method have a higher concentration of elements and a more uniform structure of the surface layer than the coatings applied by other methods. Orig. art. has: 5 figures. [ND]

SUB CODE: 11, 13/ SUBM DATE: 13Jul65/ ATD PRESS: 5077

awm

Card 4/4

L 38440-66 EWT(m)/EWP(e)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6024528 SOURCE CODE: UR/0148/66/000/007/0138/0142

AUTHOR: Zemskov, G. V.; Dombrovskaya, Ye. V.; Kogan, R. L.; Shevchenko, I. M.

ORG: Odessa Polytechnic Institute (Odesskiy politekhnicheskiy institut)

TITLE: Cementation with boron and titanium

SOURCE: IVUZ. Chernaya metallurgiya, no. 7, 1966, 138-142

TOPIC TAGS: nickel alloy, heat resistant alloy, boron, titanium, alloy boronizing, alloy titanizing, alloy diffusion coating, iron, iron diffusion coating, metal diffusion, alloy composition, metal coating/ ZhS6-K heat resistant alloy

ABSTRACT: The structure of diffusion layers in ZhS6-K heat-resistant alloy and commercial-grade iron, obtained by pack cementation at 900—1050C in mixtures of boron and titanium, or boron carbide and borax, or in titanium alone, has been investigated. The thickness, composition, and microhardness of diffusion layers produced in mixtures of titanium and boron varied widely depending on the boron titanium ratio in the mixture (see Fig. 1). In mixtures containing 37—57% titanium for ZhS6-K alloy or 37% titanium for iron, the diffusion rate of boron and titanium is roughly the same. The diffusion layer in ZhS6-K alloy produced in a 50—50 mixture of boron and titanium consisted of a solid solution of boron and titanium in nickel with inclusions of titanium boride on the very surface and at the metal-diffusion layer interface.

Card 1/2 UDC: 669.14.018.45:669.781:669.295:621.785.53

L 38440-66

ACC NR: AP6024528

2

The diffusion layer in iron consisted of a solid solution of titanium in iron with inclusions of iron titanides and iron borides. The diffusion layer in ZhS6-K alloy obtained in the mixture of boron carbide and borax consisted of a homogeneous surface zone containing nickel boride having a microhardness of 1300 kg/mm^2 and an inner zone containing a nickel-base solid solution with inclusions of intermetallic compounds. The microhardness of this zone was 600—800 kg/mm^2. The inward diffusion of boron is accompanied by the outward diffusion of the alloy components. The diffusion layer produced by cementation in titanium consisted of three zones. The outer zone had a high content of intermetallic compounds and a microhardness of 700—800 kg/mm^2. The middle and inner zones consisted of nickel-base solid solutions. Subsequent cementation of boronized alloy in titanium produced a three-zone diffusion layer with an outer zone having a thickness of 40 μ and a microhardness of 1890 kg/mm^2. The subsequent boronizing of titanized alloy produced no changes in the structure of the diffusion layer. Orig art. has: 6 figures. [DV]

SUB CODE: 11, 13/ SUBM DATE: 18Jan65/ OTH REF: 002/ ATD PRESS: 5042

Card 2/2 D

L 42792-66 EWP(e)/EWT(m)/T/EWP(t)/ETI IJP(c) JD/WW/WH

ACC NR: AP6029075 SOURCE CODE: UR/0413/66/000/014/0131/0131

INVENTOR: Zemskov, G. V.; Shestakov, A. I. 47 B

ORG: none

TITLE: Method of applying a diffusion coating on graphite. Class 48, No. 184093

SOURCE: Izobret prom obraz tov zn, no. 14, 1966, 131

TOPIC TAGS: diffusion coating, graphite ~~coating~~, metal coating, METAL DIFFUSION PLATING

ABSTRACT: This Author Certificate introduces a method of applying metal diffusion coating on graphite. To ensure the homogeneity of the diffusion layers, the process is carried out in an atmosphere of halides, such as bromides, of the metal used as a coating medium. In a modification of the above method, the metal halides are carried into the reaction chamber by an inert gas, such as helium or argon. [TD]

SUB CODE: 11, 13/ SUBM DATE: 20Mar64/ ATD PRESS: 5066

Card 1/1 IC UDC: 621.793.6:546.26-162-492.2

ACC NR: AP6033510 SOURCE CODE: UR/0413/66/000/018/0143/0143

INVENTOR: Zemskov, G. V.; Shulenok, P. F.

ORG: none

TITLE: Method of preparation of titanium and titanium-alloy surface before hot-aluminizing. Class 48, No. 186244

SOURCE: Izobret prom obraz tov zn, no. 18, 1966, 143

TOPIC TAGS: titanium, ~~coating~~, titanium alloy ~~coating~~, METAL SURFACING, ALUMINUM PLATING

ABSTRACT: This Authors Certificate introduces a method of surface treatment of titanium and titanium alloy parts as a preparation for hot aluminizing. To simplify the process, the parts are oxidized in air at 450—700C for 15—20 min.

SUB CODE: 11/ SUB CODE: 12May64/

Card 1/1 UDC: 621.793.52

EWP(e)/EPA(s)-2/EWT(m)/EPF(c)/EWP(i)/EPA(w)-2/EWP(t)/EWP(k)/EWP(z)/EWP(b)
IJP(c) JD/WW/WH

ACCESSION NR: AP5022538 UR/0226/65/000/009/0001/0005

AUTHOR: Zemskov, G. V.; Shestakov, A. I.

TITLE: Diffusion impregnation of graphite powders

SOURCE: Poroshkovaya metallurgiya, no. 9, 1965, 1-5

TOPIC TAGS: graphite powder, powder particle, graphite particle impregnation, vapor phase impregnation, chromium impregnated graphite, titanium impregnated graphite, molybdenum impregnated graphite, tungsten impregnated graphite

ABSTRACT: A method of diffusion impregnation of graphite powder with carbide-forming elements in the gaseous phase is proposed. The method is based on a reaction between graphite powder mixed with the impregnation metal particles and a vaporized halide of the same metal transported by an inert gas or hydrogen. In the experiments, graphite powder was impregnated with chromium using liquid bromine as the halide and helium for bromine-vapor transport. The impregnation was conducted at 1000—1200C for up to 90 min. It was found that the optimum conditions for obtaining the thickest impregnated layer were a bromine temperature of 25C, a feed of helium and bromine of 7 ml/sec and 0.05 ml/min, respectively, and a weight ratio of chromium particles to graphite powder in the mixture equal to 6. The reaction temperature had the

Card 1/3

L 2097-66

ACCESSION NR: AP5022538

3

greatest effect on the impregnated layer thickness (see Fig. 1 of the Enclosure). Dense, uniform, strongly adhering layers were obtained on graphite grains 60 and 200 mesh with a 50-min reaction at 2000C. X-ray structural analysis showed that all coatings consisted of Cr_3C_2 and Cr_7C_3 carbides with a microhardness of 1840—2440 dan/mm^2. In further experiments, dense, ductile coatings consisting of TiC with a microherdness of 1300—3000 dan/mm^2 were obtained on graphite particles with a 70-mm reaction at 1200C. Mo_2C coatings were obtained with a 50-min reaction at 1200C. Tungsten-carbide coatings were also obtained on graphite particles with a reaction at 1300C. Orig. art. has: 5 figures. [MS]

ASSOCIATION: Odesskiy politekhnicheskiy institut (Odessa Polytechnic Institute)

44,55

SUBMITTED: 13Feb65 ENCL: 01 SUB CODE: MT, MM

NO REF SOV: 000 OTHER: 002 ATD PRESS: 4113

Card 2/3

L 2097-66
ACCESSION NR: AP5022538

ENCLOSURE: 01

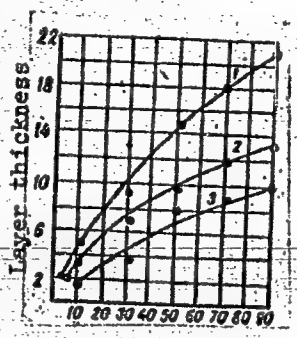


Fig. 1. Dependence of the layer thickness on the temperature and duration of impregnation process

1 - 1200C; 2 - 1100C; 3 - 1000C.

Card 3/3

669.35:621.785.545.45

AUTHOR: Zemskov, G. V.; Gushchin, L. K.

TITLE: Vacuum chromizing of steel with induction heating

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 10, 1965, 26-28

TOPIC TAGS: diffusion coating, chloride compound, electromagnetic field, chromizing

ABSTRACT: Vacuum chromizing of steel was performed in a special experimental setup with induction heating (see Fig. 1 of the Enclosure). The current source was a GL-15M generator (8.5 kva, 575-715 kilo-cps). The chromizing mixtures used were ferrochrome and chamotte (50:50%), as well as 50% ferrochrome, 48% chamotte, and 2% NH_4Cl, and the vacuum was $1 \cdot 10^{-3}$ mm Hg. The temperature was maintained rigorously constant. Figs. 2 and 3 of the Enclosure show the thickness of chromized layer as a function of the time and temperature of the process of vacuum deposition. The rate of the process is initially at its highest, gradually declining with time. The curve is of a parabolic character. As the temperature increases, the thickness of the coating increases markedly, particularly at 1200°C and higher. If a chromizing mixture containing NH_4Cl is used, the thickness of the diffusion coating is much greater. Apparently, the ionization of the gases and vapors of the metal [illegible] course of surface reactions and [illegible]

Card 1/5

...improves the influx of the ions of the saturating ... accelerates the

ACC NR: AP5025594

components owing to the "electron wind" forming in a variable magnetic field. This conclusion was verified by performing the following experiment: a hollow cylinder was filled with a mixture of ferrochrome and chamotte and capped, and its outer surface was covered with the same mixture. Then the cylinder was briefly heated to equalize the temperature of its inner and outer walls and thereupon it was vacuum-chromized in the setup for 30 min. It was found that then the chromized layer on the outer wall of the cylinder was twice as thick as on the inner wall. Thus, despite the identical temperature, the process of coating of the inner wall of the cylinder is slower. Explanation: the walls and lids of the cylinder, ... the inner surface, attenuated the ...

powders containing NH_4Cl. Orig.

ASSOCIATION: Odesskiy politekhnicheskiy institut (Odessa Polytechnic Institute)

SUBMITTED: 00 ENCL: 03 SUB CODE: MM, IE

NO REF SOV: 000 OTHER: 000

Card 2/5

ACC NR: AP5025594

ENCLOSURE: 01

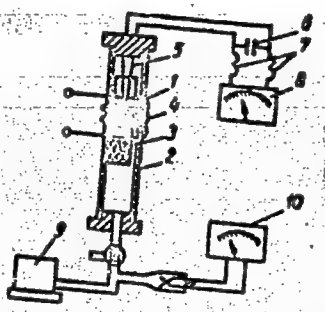


Fig. 1. Diagram of setup for vacuum chromizing with induction heating

1 - specimen; 2 - quartz cylinder; 3 - glass with coating mixture; 4 - inductor; 5 - thermocouple; 6 - capacitor; 7 - inductances; 8 - galvanometer; 9 - vacuum pump; 10 - vacuum gauge

Card 3/5

L 3366-66

ACC NR: AP5025594

ENCLOSURE: 02

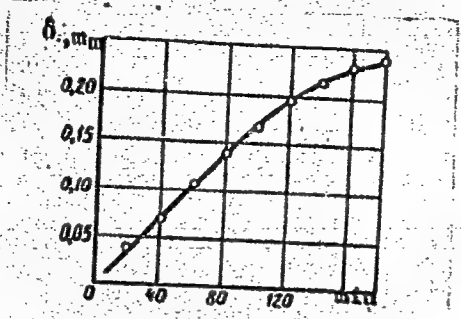


Fig. 2. Depth of chromized layer as a function of the time of vacuum saturation of steel 10 at 1000°C with a mixture of 50% ferrochrome + 50% chamotte

ENCLOSURE: 03

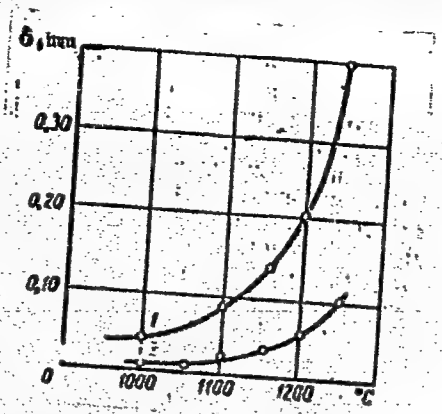


Fig. 3. Depth of chromized layer as a function of saturation temperature (mixture of 50% ferrochrome + 50% chamotte, 30-min exposure);

1 - steel 10; 2 - steel U8

L 3436-66 EWT(m)/EWP(i)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b)/EWA(c) MJW/JD/GS

ACCESSION NR: AT5024872 UR/0000/65/000/000/0056/0064

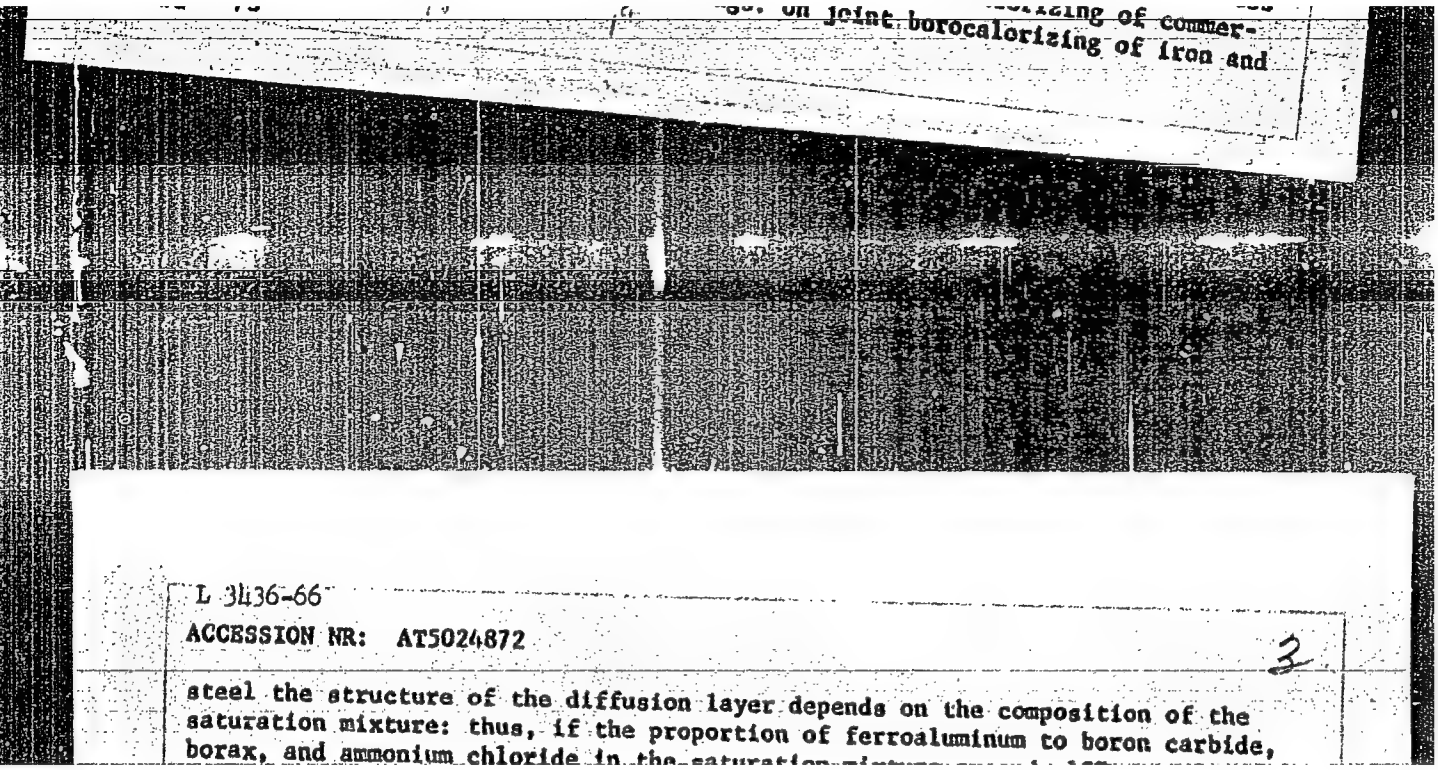
AUTHOR: Zemskov, G. V.; Kaydash, N. G. 44,55

TITLE: Borocalorizing of iron and steel 51 48 B+1

SOURCE: AN UkrSSR. Institut problem materialovedeniya. Diffuzionnyye pokrytiya na metallakh (Diffusion coatings on metals). Kiev, Naukova dumka, 1965, 56-64

TOPIC TAGS: metal coating, boron, aluminum, steel, boride, metal diffusion plating, compressive stress, tensile stress

ABSTRACT: Borocalorizing, or the combined boronizing and calorizing of iron and steel, eliminates the disadvantages inherent in either technique if applied alone: high brittleness and low high-temperature strength of the boronized case and low hardness and wear resistance of the alitized case. In view of the scarcity of the published data on borocalorizing and the great prospects of this combined tech-nique, the authors investigated the effect of the composition of the mixture, temperature, and duration of the diffusion layer



...on joint borocalorizing of commer-
borocalorizing of iron and

L 3436-66

ACCESSION NR: AT5024872

3

steel the structure of the diffusion layer depends on the composition of the saturation mixture: thus, if the proportion of ferroaluminum to boron carbide, borax, and ammonium chloride in the saturation

Card 2/3

L 3436-66

ACCESSION NR: AT5024872

differing from the specific volume of the metal saturated. Orig. art. has: 5 figures, 1 table.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MM

NR REF SOV: 008 OTHER: 001

Card 3/3

L 3414-66 EWT(m)/EWP(i)/T/EWP(t)/EWP(b) JD/GS

ACCESSION NR: AT5024876 UR/0000/65/000/000/0116/0119 62 B+1

AUTHOR: Zemskov, G. V.; Gushchin, L. K.

TITLE: Chromizing of steel with vacuum induction heating

SOURCE: AN UkrSSR. Institut problem materialovedeniya. Diffuzionnyye pokrytiya na metallakh (Diffusion coatings on metals). Kiev, Naukova dumka, 1965, 116-119

TOPIC TAGS: induction furnace, steel, metal coating, chloride, compound, electromagnetic field, chromium, diffusion coating, chromizing

ABSTRACT: The shortcoming of the diffusion coating of alloys with different elements is the considerable duration of this process, which can be accelerated only by raising temperature. But this greatly deteriorates the properties of the base metal, and increases the wear on furnace equipment at high temperatures.

Card 1/5

L 3414-66

ACCESSION NR: AT5024876

715 cps vacuum-tube oscillator. The setup for diffusion coating is shown in Fig. 1 of the Enclosure. The chromizing of steel was performed in a mixture of 50% ferrochrome and 50% chamotte in a vacuum ($1 \cdot 10^{-3}$ mm Hg) as well as in a mixture of 50% ferrochrome, 48% chamotte, and 2% NH_4Cl, at temperatures of from 950°C to 1100°C. When the mixture containing NH_4Cl was used

L 3414-66
ACCESSION NR: AT5024876

der, the process of coating at the inner wall was less intense, which may be interpreted thus: the walls and lids of the cylinder, serving as a shield for the inner surface, attenuated the electromagnetic field and hence also the ionization and the "electron wind" in the cylinder's interior. Orig. art. has: 4 figures.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 02 SUB CODE: MM, IE

Card 2/2

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001964420011-3"

L 3414-66

ACCESSION NR: AT5024876 ENCLOSURE: 01

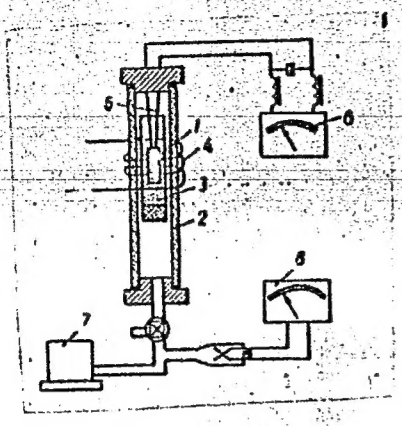


Fig. 1. Diagram of setup for vacuum induction chromizing

1 - specimen; 2 - quartz cylinder;
3 - bottle with saturating mixture;
4 - inductor; 5 - thermocouple;
6 - galvanometer; 7 - vacuum pump;
8 - vacuum gauge

Card 4/5

L 3414-66

ACCESSION NR: AT5024876

ENCLOSURE: 02

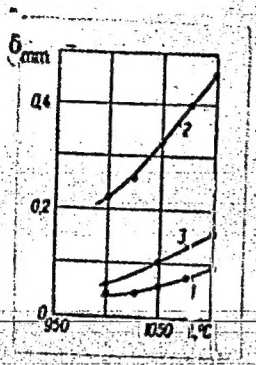


Fig. 2. Depth of chromized layer as a function of different methods of diffusion coating

1 - vacuum induction heating, mixture of 50% FeCr + 50% chamotte, 30 min; 2 - induction heating with the vacuum pumps disconnected, mixture of 50% FeCr + 48% chamotte + 2% NH_4Cl, 30 min; 3 - conventional furnace heating in sealed container, mixture of 50% FeCr + 48% chamotte + 2% NH_4Cl, 6 hr

Card 5/5 nd

ZEMSKOV, G.V.; KOSINSKIY, I.V.; PRAVEN'KAYA, L.L.

Chromized and siliconized steel. Metalloved. i term. obr. met. no.9:45-47 S '64. (MIRA 17:11)

1. Odesskiy politekhnicheskiy institut.